**What is claimed is:**

Sub B1

1. An aviation gasoline composition possessing a high motor octane number and containing reduced amounts of tetraethyl lead comprising about 20 to about 80 vol% iso-octane, about 5 to about 18 vol% toluene, about 1 to about 20 vol% $C_4$ to $C_5$ paraffins, about 0 to about 1 ml tetraethyl lead/gallon of said aviation gasoline composition and the balance comprising light alkylate.

2. The aviation gasoline composition of claim 1, wherein the motor octane number is at least about 98.

3. The aviation gasoline composition of claim 1, wherein the motor octane number is at least about 100.

4. The aviation gasoline composition of claim 1, comprising about 30 to about 70 vol% iso-octane.

5. The aviation gasoline composition of claim 1, comprising about 40 to about 60 vol% iso-octane.

Sub B2

6. A method of preparing an aviation gasoline composition possessing a

high motor octane number and containing reduced amounts of tetraethyl lead comprising blending about 20 to about 80 vol% iso-octane, about 5 to about 18 vol% toluene, about 1 to about 20 vol% $C_4$ to $C_5$ paraffins, about 0 to about 1 ml tetraethyl lead/gallon of said aviation gasoline composition and the balance comprising light alkylate.

7. The method of claim 6, wherein the motor octane number is at least about 98.

8. The method of claim 6, wherein the motor octane number is at least about 100.

9. The method of claim 6, comprising about 30 to about 70 vol% iso-octane.

10. The method of claim 6, comprising about 40 to about 60 vol% iso-octane.

11. A method for operating an aircraft having a spark-ignited internal combustion engine, comprising:

a) introducing the aviation gasoline composition of claim 1 into the engine, and,

b) combusting the aviation gasoline in the engine.

12. The method of claim 11, wherein the motor octane number is at least about 98.

13. The method of claim 11, wherein the motor octane number is at least about 100.

14. The method of claim 11, comprising about 30 to about 70 vol% iso-octane.

15. The method of claim 11, comprising about 40 to about 60 vol% iso-octane.

16. A method of preparing a reduced lead content aviation gasoline composition while maintaining a high motor octane number comprising,

blending an aviation gasoline composition with iso-octane, and, optionally, toluene,

wherein, the reduced lead aviation gasoline composition comprises about 20 to about 80 vol% iso-octane, about 5 to about 18 vol% toluene, about 1 to about 20 vol% $C_4$ to $C_5$ paraffins, about 0 to about 1 ml tetraethyl lead/gallon of said reduced lead aviation gasoline composition and the balance comprising light alkylate.

17. The method of claim 16, wherein the motor octane number of the reduced lead aviation gasoline is at least about 98.

18. The method of claim 16, wherein the motor octane number of the reduced lead aviation gasoline is at least about 100.

19. The method of claim 16, wherein the reduced lead aviation gasoline comprises about 30 to about 70 vol% iso-octane.

20. The method of claim 16, wherein the reduced lead aviation gasoline comprises about 40 to about 60 vol% iso-octane.